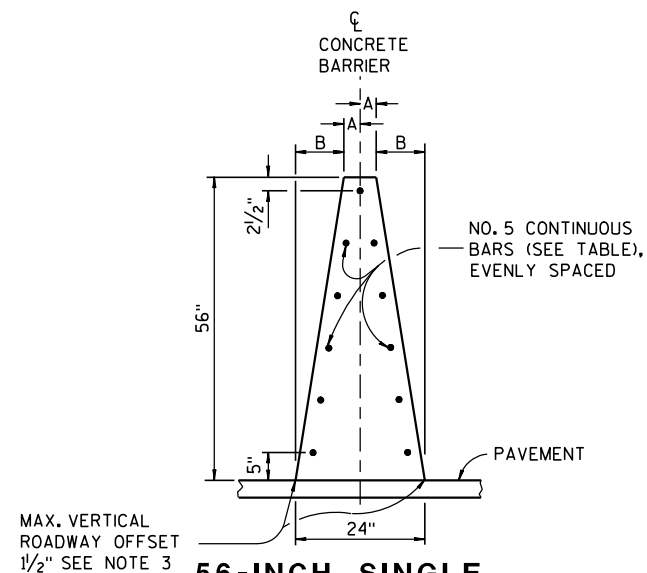
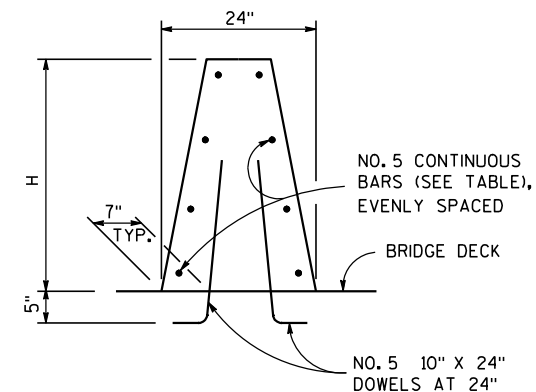


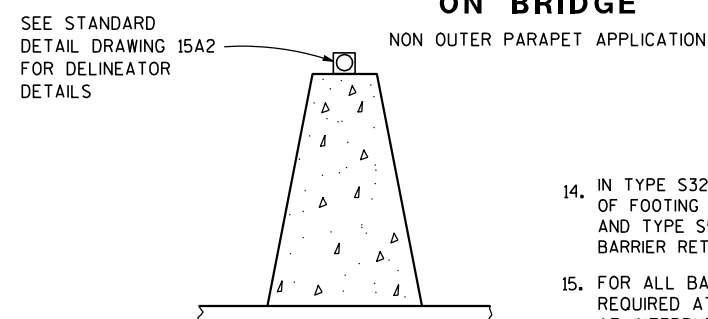
**32-INCH, 36-INCH OR 42-INCH
SINGLE SLOPE CONCRETE BARRIER
(TYPE S32, TYPE S36, AND
TYPE S42)**



NOTE 3 **56-INCH SINGLE
SLOPE CONCRETE BARRIER
(TYPE S56)**

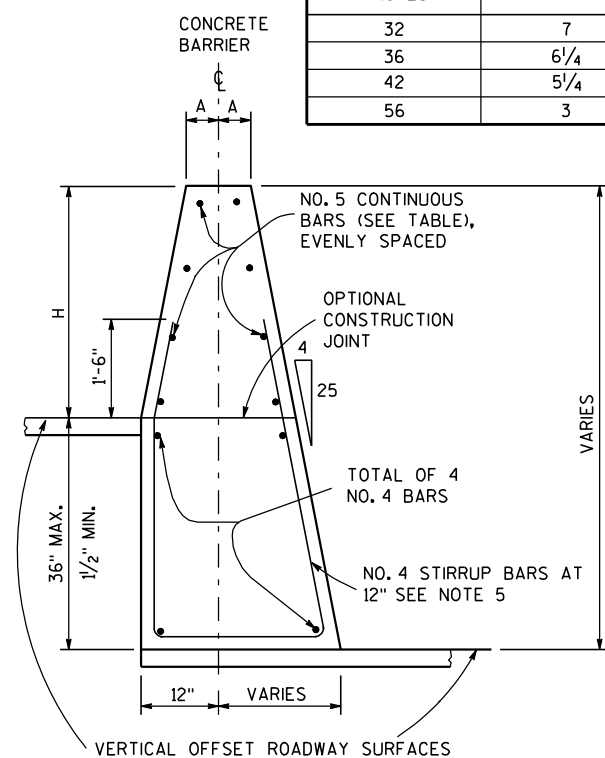


SINGLE SLOPE CONCRETE BARRIER ON BRIDGE

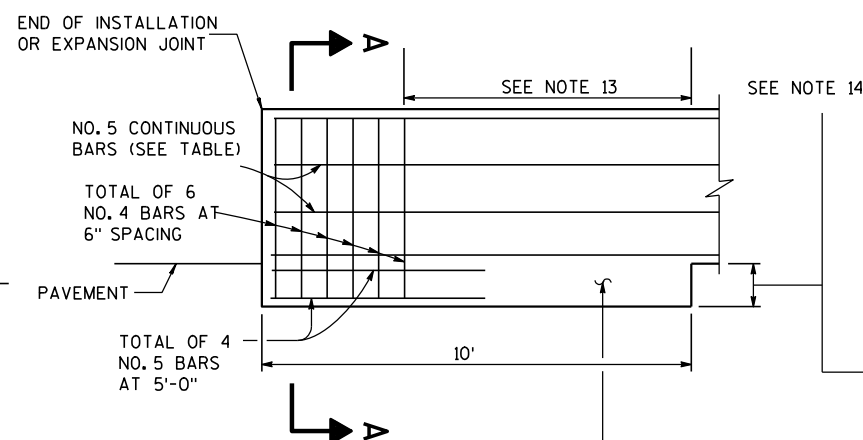


DELINEATION

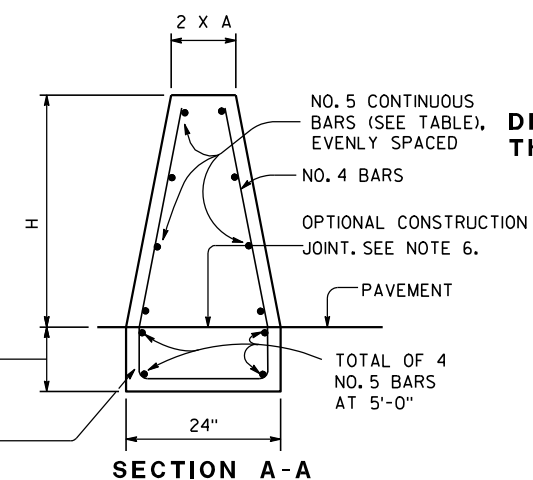
BARRIER HEIGHT H INCHES	A INCHES	B INCHES	NUMBER OF NO. 5 BARS EACH
32	7	5	8
36	6 $\frac{1}{4}$	5 $\frac{3}{4}$	8
42	5 $\frac{1}{4}$	6 $\frac{3}{4}$	10
56	3	9	11



**SINGLE SLOPE CONCRETE
BARRIER AND RETAINING WALL
(TYPE S32A, TYPE S36A, TYPE S42A, TYPE S56A)
(BETWEEN ADJACENT ROADWAYS)**



**END ANCHOR SINGLE
SLOPE CONCRETE BARRIER**
AT CONSTRUCTION JOINT



SECTION A-A

GENERAL NOTES

1. WHERE THE CONCRETE BARRIER IS ADDED TO THE FACE OF EXISTING CONCRETE STRUCTURE, MATCH EXISTING WEEP HOLES.
 2. EXPANSION JOINTS IN CONCRETE BARRIER SHALL BE LOCATED AT ALL DECK, PAVEMENT AND PRINCIPAL WALL JOINTS. EXPANSION JOINT FILLER MATERIAL SHALL BE THE SAME SIZE AS JOINT OR 1/2" MINIMUM.
 3. WHERE VERTICAL ROADWAY OFFSET IS GREATER THAN 1/2", USE TYPE A
 4. PLACE BARRIER PERPENDICULAR TO SHOULDER GRADE, UNLESS INDICATED IN PLAN.
 5. EXCEPT IN ANCHORS, VERTICAL REINFORCING STIRRUP NOT REQUIRED FOR ROADWAY OFFSETS LESS THAN 1'-0".
 6. FOR TYPE S32, TYPE S36, TYPE S42, AND S56 MONOLITHIC FOOTING OR DOWELED FOOTING WITH 2-#8 x 8" @ 2'-0".
 7. STAGGER LAPPING OF LONGITUDINAL STEEL. MINIMUM OVERLAP OF STEEL 2 FEET. BARS AT LAPS TO BE FIRMLY TIED OR CONNECTED.
 8. 4000 PSI CONCRETE AIR ENTRAINMENT PER STANDARD SPECIFICATION 501.
 9. WHEN SWITCHING BETWEEN SLIP FORM AND CAST-IN-PLACE OPERATIONS, EXTEND LONGITUDINAL STEEL 3 FEET BEYOND SLIP-FORMING CUT OFF POINT. EXPOSED STEEL INTO NEXT POURS REINFORCEMENT. LAPS TO BE FIRMLY TIED.
 10. USE 3/4" BEVEL OR 1" RADIUS ON ALL EXPOSED SHARP EDGES UNLESS OTHERWISE NOTED.
 11. 2" CLEAR COVER TYPICAL.
 12. COLD-JOINTS MAY BE USED BETWEEN ANCHOR INSTALLATIONS. WHEN A COLD JOINT IS NEEDED, 3 FEET OF LAP OF LONGITUDINAL STEEL IS REQUIRED. LAPS TO BE FIRMLY TIED
 13. IN TYPE S32, TYPE S36, TYPE S42 AND TYPE S56 NO ADDITIONAL VERTICAL STEEL NEEDED. IN TYPE S32A, TYPE S36A, TYPE S42A AND TYPE S56A REQUIRES VERTICAL STEEL. SEE OTHER DETAIL
- E S42 AND TYPE S56 DEPTH
2A, TYPE S36A, TYPE S42A
AL HEIGHT OF SINGLE SLOPE
- DELINEATOR SPACING
ON HORIZONTAL CURVES**
- | RADIUS OF CURVE | APPROXIMATE
SPACING ON CURVE |
|-----------------|---------------------------------|
| 50 FEET | 20 FEET |
| 115 FEET | 25 FEET |
| 125 FEET | 25 FEET |
- HOWN, ANCHOR IS
ARRIER ENDS AND
RETE BARRIER.
ON DRAWING
.D. 14B33, ANCHORS

DELINEATOR SPACING ON HORIZONTAL CURVES

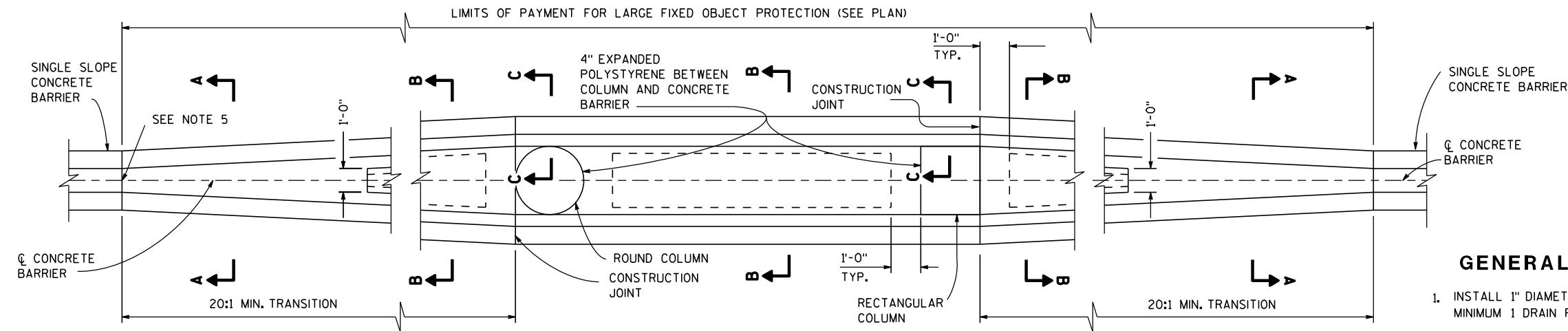
RADIUS OF CURVE	APPROXIMATE SPACING ON CURVE
50 FEET	20 FEET
115 FEET	25 FEET
180 FEET	35 FEET
250 FEET	40 FEET
300 FEET	50 FEET
400 FEET	55 FEET
500 FEET	65 FEET
600 FEET	70 FEET
700 FEET	75 FEET
800 FEET	80 FEET
900 FEET	85 FEET
1000 FEET	90 FEET

DELINEATOR SPACING ON RADIUS GREATER THAN 1000 FEET OR TANGENT SECTIONS

	LENGTH OF BARRIER	REFLECTOR SPACING	NO. SURFACES REFLECTORIZED	MIN. NO. REFLECTOR
ONE WAY TRAFFIC	< 200' > 200'	50' C-C 100' C-C	1 1	3
TWO WAY TRAFFIC	< 200' > 200'	25' C-C 50' C-C	1 1	6
TWO WAY TRAFFIC	< 200' > 200'	50' C-C 100' C-C	2 2	3

CONCRETE BARRIER SINGLE SLOPE
(CBSS)

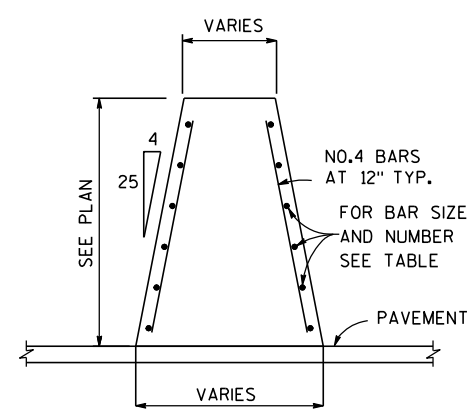
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



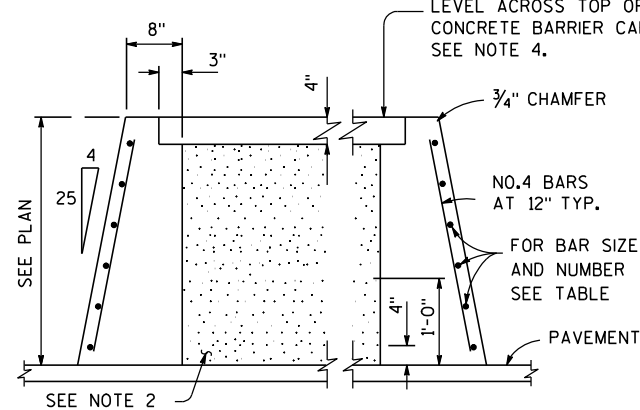
LARGE FIXED OBJECTS PROTECTION
TYPE S32, TYPE S36, TYPE S42, TYPE S56

GENERAL NOTES

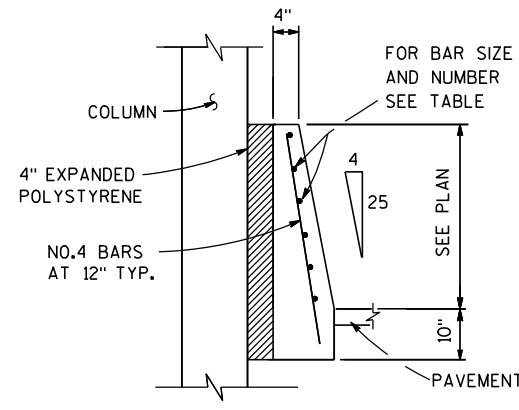
1. INSTALL 1" DIAMETER DRAIN PIPE EVERY 20' OF CROSS SECTION B-B. MINIMUM 1 DRAIN PER CAVITY.
2. BETWEEN CONCRETE BARRIER WALLS FILL WITH GRANULAR BACKFILL GRADE 2
3. REINFORCING STEEL SHALL EXTEND CONTINUOUS THROUGH CONSTRUCTION JOINTS.
4. ADJUST HEIGHT OF CONCRETE BARRIER WALL ON LOW SIDE OF OFFSET OR SUPERELEVATED ROADWAYS TO PROVIDE LEVEL GRADE ACROSS TOP OF CONCRETE CAP.
5. IF FIXED OBJECT PROTECTION IS INSTALLED FIRST, USE COLD JOINTS. IF CBSS PLACED FIRST, USE EXPANSION JOINT.



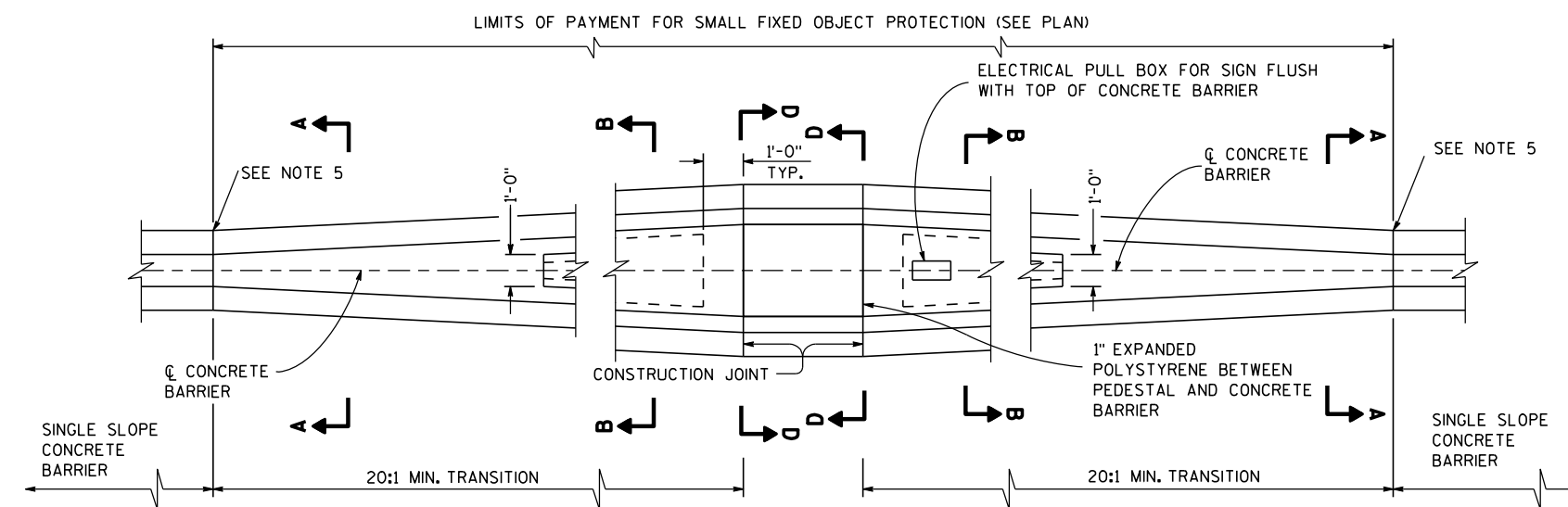
SECTION A-A



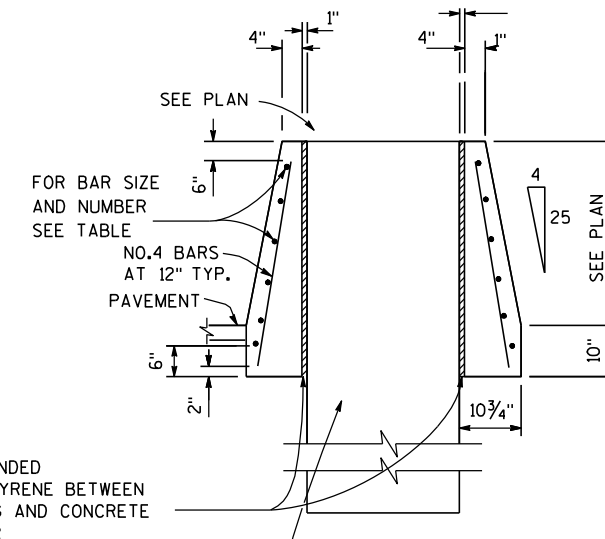
SECTION B-B



SECTION C-C



SMALL FIXED OBJECTS PROTECTION
TYPE S32, TYPE S36, TYPE S42, TYPE S56

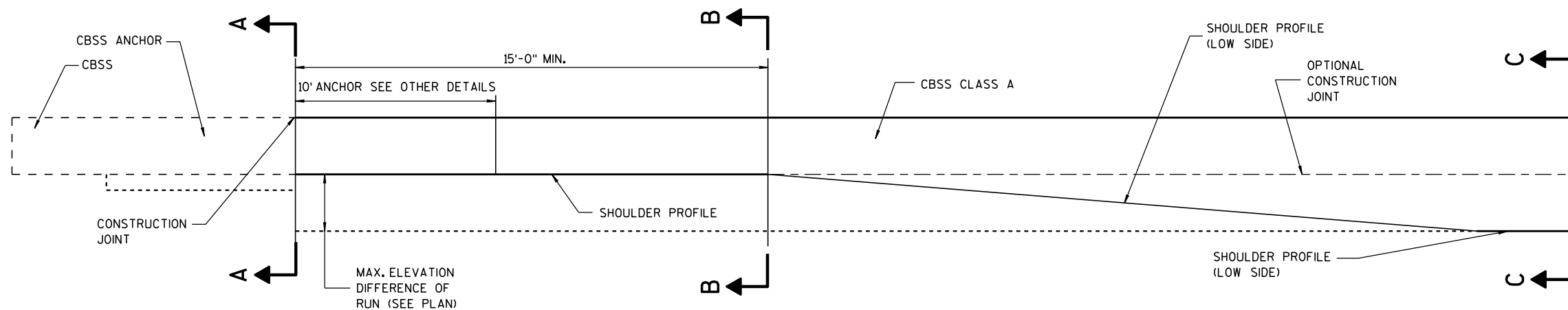


SECTION D-D

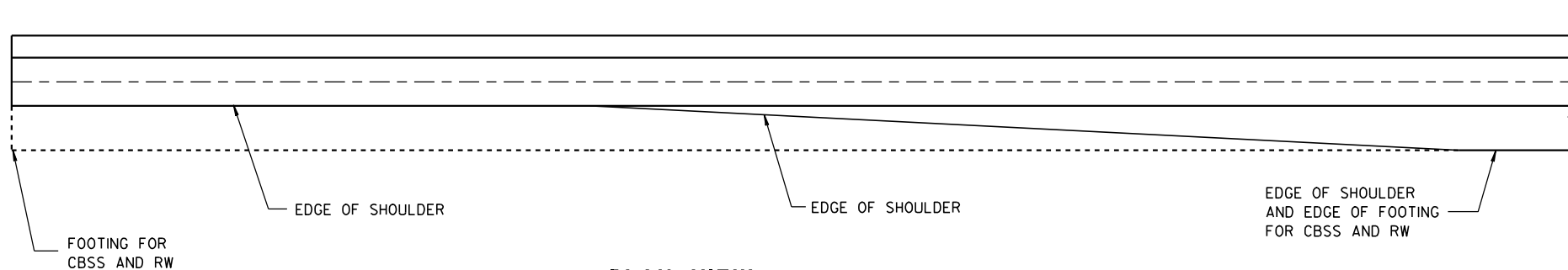
BARRIER HEIGHT H INCHES	BAR SIZE	NUMBER OF BARS EACH
32	4	6
36	4	6
42	5	6
56	5	9

**CONCRETE BARRIER SINGLE SLOPE
(CBSS)**

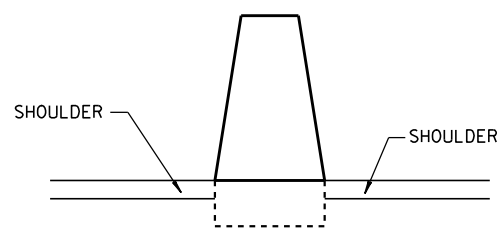
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



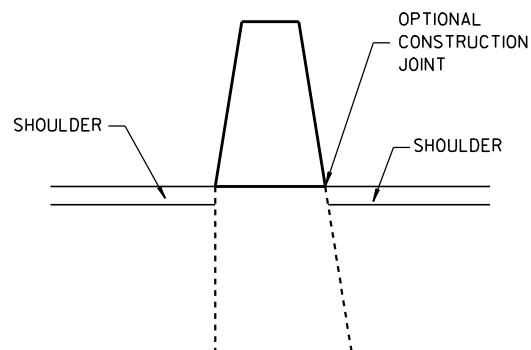
**ELEVATION VIEW
TRANSITION TO CBSS CLASS A
(TYPE S32A, TYPE S36A, TYPE S42A, TYPE S56A)**



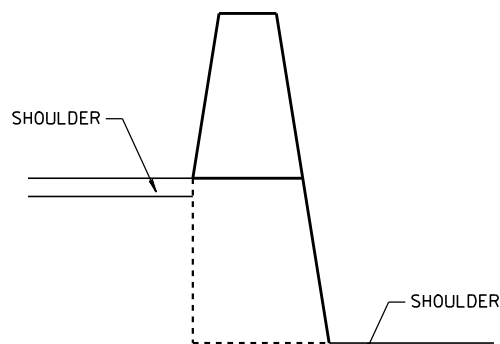
**PLAN VIEW
TRANSITION TO CBSS CLASS A
(TYPE S32A, TYPE S36A, TYPE S42A, TYPE S56A)**



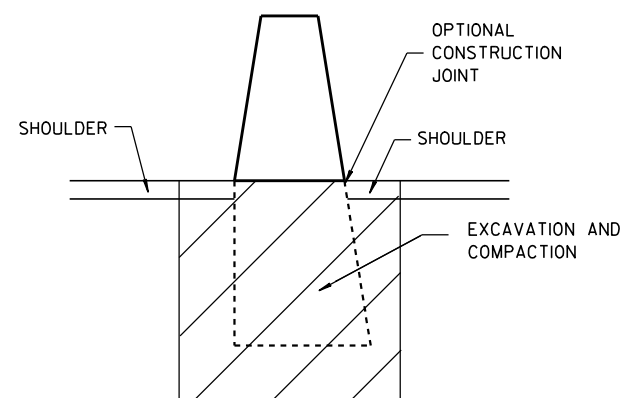
SECTION A-A



SECTION B-B

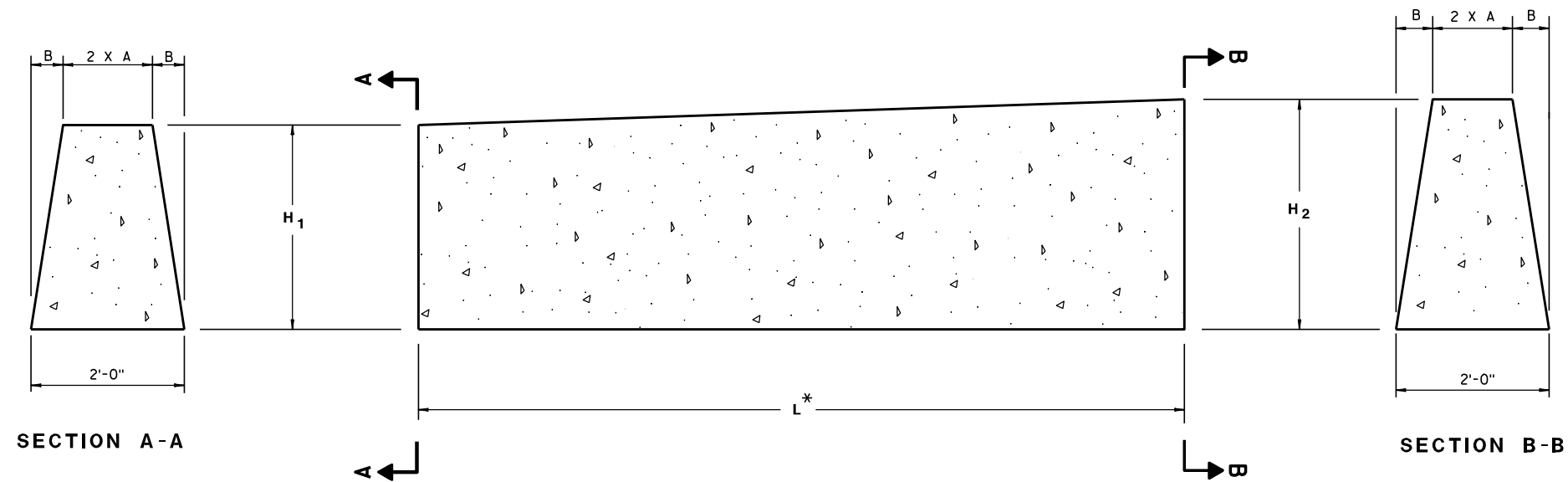


SECTION C-C



**CONCRETE BARRIER SINGLE SLOPE
(CBSS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



BARRIER DIMENSIONS

BARRIER HEIGHT INCHES	A INCHES	B INCHES
32	7	5
36	6 1/4	5 3/4
42	5 1/4	6 3/4
56	3	9

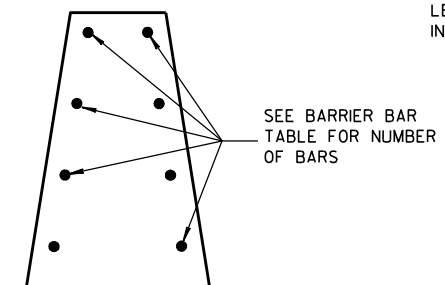
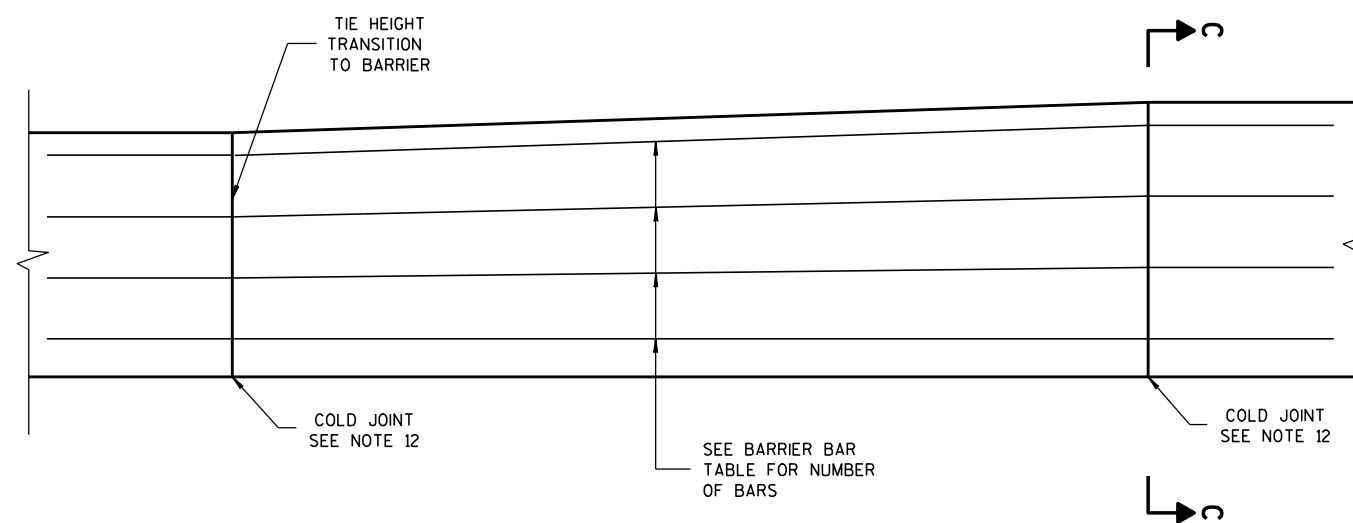
MULTIPLE HEIGHT TRANSITIONS MAY BE USED IN SEQUENCE TO GET TO APPROPRIATE HEIGHT.

USE COLD JOINT TO CONNECT MULTIPLE HEIGHT TRANSITIONS.

BARRIER BARS

H ₁	H ₂	L *	NUMBER OF NO. 5 BARS
32"	36"	10'-0"	8
36"	42"	10'-6"	10
42"	56"	24'-6"	11

*
LENGTH OF DOUBLE COLD JOINT INCLUDED
IN THE TOTAL LENGTH OF CBSS.



CONCRETE BARRIER
SINGLE SLOPE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
6-3-2010
DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA

*Concrete Barrier Single Slope***Contact Person**

Erik Emerson (608) 266-2842

References[Standard Spec 633](#)[FDM 11-45-2](#)

FHWA/CA/ESC-98/02 Vehicular Crash Tests of Slip-formed, Single Slope, Concrete Median Barrier

FHWA Geometric and Safety Design Group Acceptance Letter BB-45
2006 CALTRANS Standard Plan Drawings A76A-F**Design Notes:**

The concrete barrier design requires the use of various transitions for height, and shape transitions. In certain locations (e.g. near fixed objects) may require the use of other specialized transitions. The concrete barrier details are designed to have a crashworthy shape, and are structurally designed to contain an impact load. The concrete barrier design is not structural protection for bridge substructures.

Standardized Special Provisions associated with this drawing:STSP NUMBER TITLE

(none)

Other SDDs associated with this drawing:[SDD 14B20](#) Thrie Beam Structure Approaches[SDD 14B33](#) Thrie Beam Anchorages[SDD 14B34](#) Short Concrete Barrier Sections (Use for runs of less than 40')[SDD 14B35](#) Single-Faced NJ to Single Slope Transitions[SDD 14B36](#) Single-Faced F to Single Slope Transitions[SDD 14B37](#) Double-Faced NJ to Single Slope Transitions[SDD 14B38](#) Double-Faced F to Single Slope Transitions[SDD 14B39](#) Single Slope Barrier Height Transitions (Use when double cold joint is not feasible)[SDD 14B40](#) Vertical Face to Single Slope Transitions[SDD 14B41](#) Roadside Retaining Wall Barrier[SDD 15A2](#) Delineator Post, Delineator Bracket, and Delineator**Bid items associated with this drawing:**

Bid items for single slope barrier and associated transitions are encoded as follows:

BARRIER BID ITEM TYPES		DESCRIPTION	CODE
<p><i>example: Concrete Barrier Type S36A is a 36" single sloped median retaining wall barrier</i></p>	SHAPE	New Jersey shape	NJ
		F shape	F
		Vertical	V
		Single slope barrier	S
<p><i>example: Concrete Barrier Transition Type F32SF to S32 is a transition from 32" single faced F barrier to a 32" single sloped barrier</i></p>	CLASS	Standard barrier section	none
		Median retaining wall	A
		Short barrier section	B
		Roadside retaining wall	C
	FACES	Double faced barrier	DF
		Single faced barrier	SF

<u>ITEM NUMBER</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
204.0157	Removing Concrete Barrier	LF
603.1100 - 1199	Concrete Barrier Type S(height)	LF
603.1200 - 1299	Concrete Barrier Type S(height)A	LF
603.2100 - 2199	Concrete Barrier Fixed Object Protection Type S(height)	LF
614.0200	Steel Thrie Beam Structure Approach	LF
614.0700	Sand Barrel Array	EACH
614.0800	Crash Cushions Permanent	EACH
614.0805	Crash Cushions Permanent Low Maintenance	EACH
614.0905	Crash Cushion Temporary	EACH
633.0500	Delineator Reflectors	EACH
633.1000	Delineator Brackets	EACH
690.0150	Sawing Asphalt	LF
690.0250	Sawing Concrete	LF